

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF NEW YORK

XEROX CORP.,

Plaintiff,

-vs-

97-CV-6182T(F)

3COM CORPORATION,
U.S. ROBOTICS CORPORATION,
U.S. ROBOTICS ACCESS CORP.,
and PALM COMPUTING, INC.,

Defendants.

**DECISION
and ORDER**

INTRODUCTION

Plaintiff Xerox Corporation, ("Xerox"), brings this patent infringement action against defendants 3Com Corporation, U.S. Robotics Corporation, U.S. Robotics Access Corp. and Palm Computing, (collectively "3Com") claiming that defendants have infringed upon U.S. Patent No. 5,596,656, (the '656 Patent), which is owned by Xerox. The '656 Patent discloses a system for computer interpretation of handwritten symbols called "unistrokes." Xerox claims that 3Com is infringing the '656 Patent by manufacturing and selling a device, (known as a "PalmPilot"), that utilizes a computer-based system for recognizing handwritten symbols called "Graffiti." Xerox contends that Graffiti infringes upon the '656 Patent because it practices all of the independent claims of the '656 Patent.

By Decision and Order dated June 6, 2000, I construed the claims of the '656 Patent, and held that 3Com's Graffiti system did not infringe on that patent. Xerox appealed and the Court of

Appeals affirmed-in-part and reversed-in-part my June 6, 2000 Decision and Order, and remanded this action for further proceedings consistent with its Mandate.

For determination are motions for summary judgment brought by the parties on the issues of infringement, validity, and enforceability. Xerox claims that it is entitled to judgment in its favor on the issue of infringement because the Court of Appeals has conclusively determined that Graffiti infringes on the '656 Patent. In the alternative, Xerox claims that because every symbol used in 3Com's Graffiti system reads on each of the independent claims of the '656 Patent, Graffiti infringes on that patent. With respect to the issues of the validity and enforceability of the '656 Patent, Xerox claims that it is entitled to judgment in its favor on those issues as well because there is no clear and convincing evidence that its patent is either invalid or unenforceable.

3Com contends that it is entitled to summary judgment in its favor on the issues of infringement, validity and enforceability. 3Com argues that although the Court of Appeals reversed this court's holding that Graffiti does not infringe the '656 Patent, it remanded the case for further proof, or for a trial, on the issue of whether or not every Graffiti symbol infringes on the claims of the '656 Patent. 3Com also claims that because not every Graffiti symbol practices the claims of the '656 Patent, it is entitled to

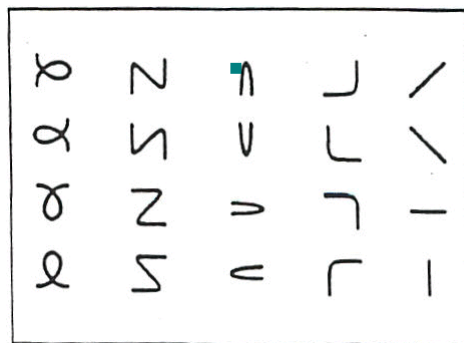
summary judgment of non-infringement. In the alternative, 3Com argues that if the '656 Patent is construed in such a way that Graffiti is covered by that patent, then the '656 Patent is invalid as against prior art because the patent's claims would be covered by inventions disclosed in previous references. 3Com further argues that the '656 Patent is invalid or unenforceable due to the inventor's failure to disclose the best mode of practicing the invention; failing to comply with the enablement, written description, and definiteness requirements in prosecuting the patent application; failing to disclose all of the inventors; and because Xerox engaged in inequitable conduct during the original prosecution of the patent and during reexamination.

BACKGROUND

I. The Patent

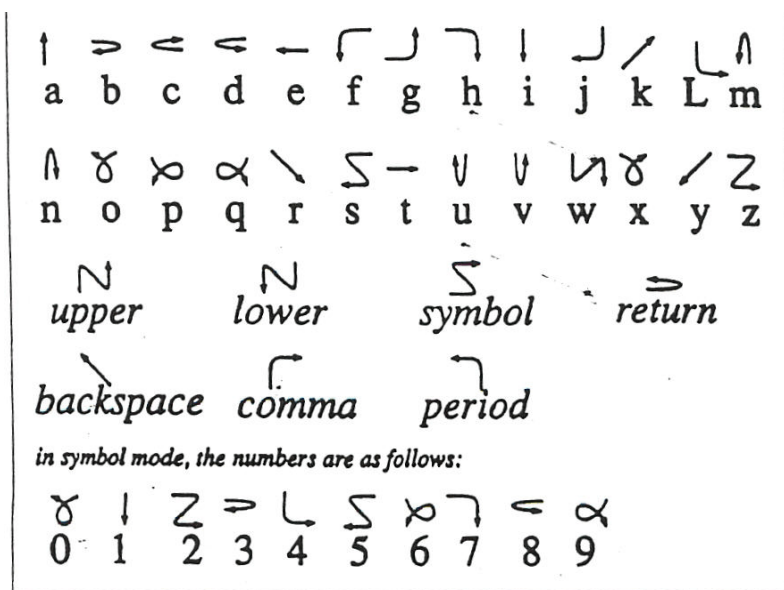
Xerox is the owner of U.S. Patent 5,596,656 entitled "Unistrokes for Computerized Interpretation of Handwriting." The patent describes the invention of a set of single-stroke characters, called Unistrokes, which, when written by hand on a pressure-sensitive screen, can be recognized and translated by a computer into alphanumeric characters. According to the invention, Unistroke symbols are ideal for computer recognition because unlike ordinary Roman alphanumeric characters, which are "not readily distinguishable from each other in the face of rapid or otherwise

sloppy writing" and contain "subtle graphical distinctions", Unistrokes are "exceptionally well separated from each other graphically." United States Patent No. 5,596,656 at Column 1, lines 54-55; Column 1, line 59; Column 2, lines 38-39. This "wide separation of unistroke symbols . . . reduces the probability of obtaining erroneous or ambiguous results from the recognition process." United States Patent No. 5,596,656 at Column 4, lines 47-49. As an example of Unistrokes that are graphically well separated from each other, the '656 Patent discloses the following symbol set:



As can be seen from this example, this embodiment of the unistrokes invention employs 5 distinct symbols (found above as the symbols in the first line from left to right), each of which is written in four different rotational orientations (0°, 45°, 90°, and 135°), which results in a symbol set of 20 unistroke symbols. See '656 Patent at Column 3, lines 15-17. In this embodiment, the 20 symbols may be written in either of two directions, which results in a character set of 40 unique symbols. '656 Patent at

Column 3, lines 17-20. Utilizing this feature of the invention, the '656 Patent discloses, (as one embodiment of the invention), a set of Unistroke symbols corresponding to the letters and numbers of the Roman alphanumeric system as follows, (with the arrow signifying the direction in which the stroke is formed):



As can be seen from this figure, unistroke symbols that are geometrically identical (for example the strokes representing the "c" and the "d"), can be distinguished by the direction in which they are formed.

Another feature of unistroke symbols is the fact that unlike characters of the Roman alphabet, which can require two or more strokes to form, unistrokes are single-stroke symbols. Accordingly, the recognition device need not wait for a second or

third stroke before it can begin the process of recognizing the Unistroke symbol. This single stroke characteristic, combined with the graphically distinct nature of the symbols, allows Unistroke symbols to be definitively recognized immediately upon completion of the stroke.

Finally, the single-stroke nature of the Unistroke symbols, along with definitive recognition and other characteristics, facilitates recognition of the symbols without reference to where previous symbols were written on the pressure-sensitive screen. This concept is referred to by the parties, and by this court and the Court of Appeals, as "spatial independence," and is taught in Claims 1, 10, 12, and 16 of the '656 Patent.

II. Procedural History

Xerox commenced this action on April 28, 1997, claiming that the defendants willfully infringed and are infringing on the '656 Patent by making, using and selling the invention disclosed therein. Specifically, plaintiff contends that defendants' PalmPilot line of hand-held computers, uses the Unistrokes technology disclosed in the '656 Patent in their Graffiti software. Defendants deny plaintiff's claims.

By Decision and Order dated September 29, 1998, this court denied defendants' motion for summary judgment and granted the plaintiff's cross-motion for partial summary judgment, finding that the '656 Patent is not invalid for prior public use. Thereafter,

defendants filed a request for re-examination of the '656 Patent by the Patent and Trademark Office ("PTO"). On January 14, 1999, the PTO granted 3Com's request for re-examination. After an initial office action by the PTO which found all of the claims to be invalid, this court imposed a stay of proceedings in this litigation. The PTO subsequently concluded its re-examination, confirming all 16 claims of the '656 Patent. This court then lifted the stay and the parties filed competing motions for summary judgment on the issues of infringement and validity of the '656 Patent.

By Decision and order dated June 6, 2000 I construed the disputed claims of the '656 Patent, and held that based on the construction of those claims, defendants' Graffiti system of recognizing handwritten symbols did not infringe on the '656 Patent. Xerox appealed this court's Decision and by Decision and Order dated October 5, 2001, the Court of Appeals for the Federal Circuit affirmed in-part, and reversed in-part my Decision. On November 9, 2001 the parties filed new motions for summary judgment based on their competing interpretations of the Court of Appeals' Decision.

DISCUSSION

I. Summary Judgment Standard

Rule 56(c) of the Federal Rules of Civil Procedure provides that summary judgment "shall be rendered forthwith if the

pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to judgment as a matter of law." When considering a motion for summary judgment, all inferences and ambiguities must be resolved in favor of the party against whom summary judgment is sought. R.B. Ventures, Ltd. v. Shane, 112 F.3d 54 (2nd Cir. 1997). If, after considering the evidence in the light most favorable to the nonmoving party, the court finds that no rational jury could find in favor of that party, a grant of summary judgment is appropriate. Annis v. County of Westchester, 136 F.3d 239, 247 (2nd Cir. 1998).

II. Infringement

Xerox moves for summary judgment on the issue of infringement on two grounds. First, Xerox contends that the Court of Appeals has decided that the defendants' product infringes on the '656 Patent, and therefore, this court may not revisit the issue, and may only enter judgment in Xerox's favor on the infringement issue. In the alternative, Xerox argues that if this court decides to reexamine the issue of infringement, the court will find that every Graffiti symbol practices every limitation of the independent claims of the '656 Patent, and thus infringes on that patent.

3Com disagrees with Xerox's contention that the Court of Appeals has already decided the issue of infringement, and argues

that the Court of Appeals remanded the action for this court to take further proof on the infringement issue. Relying heavily on Judge Clevenger's Concurring Opinion, 3Com contends that this court on remand is obligated to analyze every Graffiti symbol to determine whether or not every symbol meets each of the limitations of the '656 Patent: particularly the "graphical separation" limitation. 3Com argues that because some Graffiti symbols do not read on every limitation set forth in the independent claims of the '656 Patent, this court must enter summary judgment in favor of 3Com on the issue of infringement.

Although I find that the Court of Appeals has not conclusively decided the issue of infringement, I hold that Xerox is entitled to summary judgment in its favor on the issue of infringement on grounds that all of defendants' Graffiti symbols read on the claims of the '656 Patent as those claims have been construed by the Court of Appeals.

A. The Court of Appeals did not conclusively decide the issue of infringement.

In remanding this case, the Court of Appeals affirmed (in substantial part) this court's claim construction, and reversed this court's application of the construed patent claims to the accused product. Specifically, with respect to claim construction, the court held:

We . . . affirm the [district] court's claim construction that (1) the definition of "unistrokes" itself does not require an entire

alphabet, (2) the term "unistroke symbols" requires sufficient graphical separation that the computer can definitively recognize a symbol immediately upon delimitation or pen lift, and (3) "spatial independence" requires the accused device to be capable of properly distinguishing and recognizing symbols without reference to where a previous symbol was written on the writing surface.

Xerox v. 3Com Corporation, 267 F.3d 1361, 1367 (Fed. Cir. 2001).

While the Court of Appeals construed the disputed claims of the '656 Patent in substantial accordance with this court's previous claim construction, it differed in one important aspect with respect to the definition of the "graphical separation" requirement. Although I held that the "graphical separation" limitation required that "symbols must be well separated from each other so that unambiguous recognition of symbols can occur immediately upon completion of the symbol, even when imperfectly formed," the Court of Appeals, applying the doctrine of claim differentiation, held that the "even when perfectly formed" portion of the construction was not properly a part of the definition on grounds that such an interpretation would have rendered Claims 9 and 11 of the '656 Patent superfluous. Xerox, 267 F.3d at 1366. Accordingly, the Court of Appeals adopted a broader construction of the "graphical separation" limitation, holding that a symbol is graphically separated if it can be definitively recognized immediately upon delimitation or pen lift. Specifically, the court

held that "[t]he term 'Unistroke symbols' . . . requires sufficient graphical separation for the computer to definitively recognize a symbol immediately upon delimitation or pen lift." Xerox, 267 F.3d at 1366.

Although the Court of Appeals substantially affirmed this court's claim construction, it reversed this court's finding that Graffiti did not infringe on the '656 Patent. The Court of Appeals specifically cited three areas in which this court erred in applying the properly construed claims of the '656 Patent to the accused symbol set. First, the Appeals Court held that this court erred in finding that "Graffiti's symbols are not sufficiently 'graphically separated' from each other to be 'unistroke symbols'" Xerox, 267 F.3d at 1367. The Court of Appeals next held that this court incorrectly determined that Graffiti "does not allow for 'definitive recognition' of symbols immediately upon pen lift by the user" Xerox, 267 F.3d at 1367. Finally, the Court of Appeals held that this court erred in determining that Graffiti symbols did not employ "spatial independence." Xerox, 267 F.3d at 1367.

Xerox contends that because the Court of Appeals reversed this court's findings, rather than vacating this court's judgment, the Court of Appeals has substituted its own finding of infringement of the '656 Patent in place of the previous holding of non-infringement, and accordingly, the issue of infringement has been

unconditionally decided in its favor. Xerox argues that such a conclusion is mandated by the Federal Circuit's Internal Operating Procedures, which provide that: "[t]he court will VACATE all or part of a judgment, order, or agency decision when it is being eliminated but not replaced with a contrary judgment or order of this court" but "will REVERSE all or part of a judgment, order, or agency decision when it is being replaced with a contrary judgment or order of this court." December 1, 1998 Internal Operating Procedures of the United States Court of Appeals for the Federal Circuit at ¶¶ 10, 11. Attached as Exhibit 16 to Plaintiff's Motion for Summary Judgment. (Emphasis in the original).

Xerox further argues that the language used by the Court of Appeals in reversing this court was unambiguous, and requires this court to enter judgment in Xerox's favor on the issue of infringement without re-analyzing that issue. The Court of Appeals held that with respect to the three key areas of "graphical separation," "definitive recognition," and "spatial independence," had this court properly analyzed those issues, it could not have found that Graffiti did not read on the claims of the '656 Patent. With respect to "graphical separation," the court held: "[h]ad [the district court] properly applied its own claim construction, it could not have said that Graffiti symbols are not graphically separated from each other sufficiently to be unistroke symbols." Xerox, 267 F.3d at 1368. On the issue of "definitive recognition,"

the Appeals Court stated "the [district] court was incorrect that Graffiti does not allow for definitive recognition of all symbols immediately upon pen lift" Xerox, 267 F.3d at 1368. Finally, the Court of Appeals stated that with respect to the spatial independence claims, "[h]ad the court properly applied its own claim construction, it would have seen that Graffiti symbols meet the spatial independence limitation of the claims of the '656 Patent." Xerox, 267 F.3d at 1368. Xerox contends that based on these statements, the Court of Appeals clearly, and unambiguously determined that all Graffiti symbols employ graphical separation, are definitively recognized upon pen lift, utilize spatial independence, and thus infringe the '656 Patent.

In the absence of Judge Clevenger's concurring opinion, Xerox's argument would be much stronger, and perhaps persuasive. However, Judge Clevenger understood the majority opinion to leave open the issue of whether or not Graffiti infringes on the '656 Patent. Specifically, Judge Clevenger opined that on remand, this court would be required to review all Graffiti symbols to determine whether or not each symbol infringes on the claims of the '656 Patent. "The question to be resolved on remand is whether the accused symbols have sufficient graphic separation to meet the limitations of the claims in suit." Xerox, 267 F.3d at 1369 (Clevenger, concurring). Judge Clevenger further stated that "on remand, unless the infringement issue is susceptible to resolution

by summary judgment, the jury will have to decide if every one of the accused symbols that is composed by a single stroke meets all of the tests of a "unistroke symbol." Xerox, 267 F.3d at 1370 (emphasis added). The majority opinion does not address any of the issues raised in Judge Clevenger's concurring opinion, and does not address the issue of whether or not this court should re-visit the issue of infringement on remand.

Because the majority opinion does not explicitly state that the Court of Appeals has determined as a matter of law that Graffiti infringes on the '656 Patent, and does not specifically direct this court to enter judgment for Xerox on the issue of infringement, I find that this court may consider additional evidence on the issue of infringement in light of the Court of Appeals' findings. This position does not contravene the Court of Appeals' decision, and is in accordance with Judge Clevenger's guidance in the concurring opinion. Accordingly, I find that this court is obligated to determine whether or not every Graffiti symbol infringes on the claims of the '656 Patent. Based on the claims of that patent as construed by the Court of Appeals, I find that every Graffiti symbol does infringe on the disputed claims of the '656 Patent.

B. Each Graffiti Symbol infringes on the Claims of the '656 Patent

To determine whether or not the defendants' Graffiti system infringes on the '656 Patent, the court must determine whether or

not Graffiti reads on every limitation found in the asserted patent claims. See Amhil Enterprises Ltd. v. Wawa, Inc., 81 F.3d 1554, 1562 (Fed. Cir. 1996). To make this determination, the court must first construe the disputed claims of the patent, and then compare the properly construed claims to the accused device. Xerox, 267 F.3d at 1364. In the instant case, the Court of Appeals has construed the disputed claims of the '656 Patent to define the patented invention, "Unistrokes for Computerized Interpretation of Handwriting" in terms of two key limitations. First, the Appeals Court held that Unistroke symbols must be graphically separated such that the computer can definitively recognize a symbol immediately upon delimitation or pen lift. Xerox, 267 F.3d at 1367. Second, the Court of Appeals held that Unistroke symbols must be spatially independent, meaning that the recognition device must be capable of recognizing symbols without reference to where a previous symbol was written on the writing surface. Xerox, 267 F.3d at 1367. Based on these definitions, it is evident that all Graffiti symbols read on the asserted claims of the '656 Patent.



1. Graphical Separation and Definitive Recognition





3Com contends that the Court of Appeals has remanded this action specifically so that this court may re-examine the issue of "graphical separation" in light of the Appeals Court's analysis of that issue. Indeed, Judge Clevenger's concurring opinion stated that "[t]he question to be resolved on remand is whether the



accused symbols have sufficient graphic separation to meet the limitations of the claims in suit.” Xerox, 267 F.3d at 1369 (Clevenger, J. concurring). In analyzing every Graffiti Symbol, I find that each symbol is “graphically separated,” and therefore, that each symbol reads on the graphical separation claims of the ‘656 Patent.

a. Stroke Direction as a Component of Graphical Separation.



The Court of Appeals held that this court improperly analyzed the graphical separation issue because this court failed to take stroke direction into consideration in determining whether or not Graffiti symbols were “graphically separated.” 3Com argues that if this court were to include stroke direction in its analysis, it would find that at least some Graffiti symbols are not graphically separated, and thus Graffiti does not infringe on the asserted claims of the ‘656 Patent.

I previously held that Graffiti symbols were not graphically separated because there was significant overlap in the x-y coordinates of a number of Graffiti symbol sets. For example, the Graffiti symbol for the letter “O” is written as:  (where the dot represents the starting point of the symbol). The Graffiti symbol for the letter “Q” is virtually identical to the symbol for the letter “O”, which is drawn as follows: . Thus, in Graffiti, the “Q” symbol shares all of the x-y coordinates of the “O” symbol, and is differentiated from the “O” symbol only by the addition of

a small line extending from the top of the "O." On this basis, and similar, but uncited examples of significant overlap in the "B" and "R" symbols, (drawn in the Graffiti system as  and  respectively), the "C" and "G" symbols, (drawn respectively as  and ) and the "C" and "O" symbols, I found that at least some Graffiti symbols were in fact very similar graphically, and therefore did not practice graphical separation as required by the '656 Patent.

The Court of Appeals, however, held that it was error to fail to consider stroke direction in determining whether or not the Graffiti symbols were graphically similar. The Appeals Court noted that under my previous analysis, this court would have concluded that the unistroke symbol for "c" which is drawn as  in the disclosed embodiment of unistrokes (where the arrow indicates the direction of the stroke), is graphically indistinguishable from the Unistroke symbol for "d" which is drawn as follows:  . As the Court of Appeals clarified, those symbols are graphically separated because they are drawn in opposite directions. The Court of Appeals held that had I considered stroke direction in analyzing the "O" and "Q," symbols of the Graffiti symbol set, I would have properly concluded that the "O" and "Q" are in fact graphically separated.

3Com argues, however, that the Graffiti symbols for the "O" and the "Q" are not graphically separated because the symbols are in fact drawn in the same direction. 3Com notes that both the "O" and the "Q" are formed by starting at the top of the "O" then moving counter clockwise until the "O" is closed again at the top. The only thing distinguishing the "Q" symbol from the "O" symbol is the addition in the "Q" symbol of a straight line moving from left to right at the top of the "O." Thus, 3Com argues that the "O" and the "Q" in Graffiti are unlike the "c" and the "d" in unistrokes in that the "O" and the "Q" are drawn in the same direction, whereas the "c" and the "d" are drawn in opposite directions.

Moreover, 3Com correctly points out that the '656 Patent recognizes only two different stroke directions. The specification states that Unistroke symbols may be drawn in "up to four different rotational orientations . . . and in one of two opposite directions" United States Patent 5,596,656 at Column 3, lines 16-18 (emphasis added). Accordingly, symbols can only be drawn in two directions. 3Com argues that because the Graffiti symbols for the "O" and the "Q" are drawn in the same direction, as opposed to being drawn as follows:  and  where the direction would be opposite, Graffiti symbols are graphically similar because there is substantial overlap in the x-y coordinates, and the symbols are drawn in the same direction.

Xerox contends that stroke direction does differentiate the "O" and "Q" symbols on grounds that the "O" symbol is completed with the stylus moving to the left, and the "Q" symbol is completed with the stylus moving to the right. Such an interpretation of "stroke direction" however, is wholly unsupported by the specification, which teaches that a symbol may be formed in one of only two directions. '656 Patent at Column 3, lines 17-18. Moreover, the '656 Patent goes on to state that:

[a]dvantageously, the number of different strokes that are used to define the Unistroke alphabet is minimized, so that the strokes can be selected to be geometrically well separated from each other in sloppiness space. For the same reason, a substantial angular offset (e.g., at least 45° and preferably 90°) or directional distinction (opposing directions) is provided to distinguish between geometrically like strokes that represent different alphanumeric characters.

'656 Patent at Column 3, lines 24-31 (emphasis added). Accordingly, it is clear from the plain language of the patent that Unistroke symbols may be drawn in only two directions, and that the final direction of the stroke is not the criteria on which to determine whether or not a stroke is graphically separate from another.

While this court finds 3Com's argument to be persuasive, and Xerox's argument to be incorrect, it is bound by the mandate rule to accept the Court of Appeals determination that stroke direction differentiates the "O" and the "Q" in the Graffiti symbol set.

Despite the fact that the "O" and the "Q" are geometrically similar; are drawn in the same direction; and the fact that under the '656 Patent there can be only two directions in which a stroke can be formed, the Court of Appeals has determined that stroke direction distinguishes the "O" from the "Q", and this court is obligated to follow that determination. Accordingly, I reject 3Com's argument that some Graffiti symbols are not graphically separated because they significantly overlap in terms of x-y coordinates, and are drawn in the same direction.

b. Definitive Recognition as a component of Graphical Separation.

Even if this court were to accept 3Com's position that some Graffiti symbols are not graphically separated because they significantly overlap one another and are drawn in the same direction, 3Com's graphical separation argument is ultimately foreclosed by the broad definition of "graphical separation" set forth in the Court of Appeals decision. The Appeals Court defined graphical separation in terms of whether or not a symbol could be definitively recognized by the recognition device immediately upon delimitation or pen lift. Specifically, the court stated "[t]he term 'Unistroke symbols' therefore requires sufficient graphical separation for the computer to definitively recognize a symbol immediately upon pen lift." Xerox, 267 F.3d at 1366. Under this definition, any symbol that can be definitively recognized by a

computer will be deemed sufficiently graphically separated to be a Unistroke symbol.

3Com's arguments, however, suggest that defining graphical separation solely in terms of definitive recognition, leads to inconsistent results, in that the same symbol sets could be deemed graphically separated or not graphically separated depending upon how the recognition device is programmed to recognize the symbols. To understand this conclusion, it is necessary to first understand how a computer recognizes handwritten symbols, as taught by the '656 Patent.

Reduced to its simplest terms, the '656 Patent discloses a method for recognizing symbols that are written on a pressure-sensitive screen, or with an active stylus. '656 Patent at Column 4, lines 1-18. A computer analyzes the x-y coordinates of the symbol drawn, as well as the stroke direction, and converts that information into data, which is stored in a buffer. '656 Patent at Column 4, lines 1-7, lines 24-26. The program "recognizes" the symbol by comparing the data stored in the buffer to pre-programmed data, searching for a match. '656 Patent at Column 4, lines 36-41. If the data from the written symbol matches the pre-programmed reference data, the symbol is "recognized" and, as disclosed in the '656 Patent, translated into a predetermined alphanumeric character which is then displayed on a computer screen. '656 Patent at Column 4, lines 36-45.

If the recognition device is programmed to analyze every distinguishable point of a drawn symbol, and then compare the generated data to pre-programmed values, the recognition device will be able to definitively recognize any symbol with a unique set of x-y coordinates. However, if the device is programmed to analyze only some of the coordinates of a drawn symbol (referred to as sampling in the '656 Patent), the recognition device would be unable to definitively recognize two symbols that are geometrically different, but share the same sampled coordinates, and are drawn in the same direction. Under the first scenario, two symbols that are geometrically different would be distinguished and definitively recognized. Under the second scenario, however, the same symbols would not be definitively recognized because despite the fact that some x-y coordinates differ, the sampled coordinates, including direction, would be identical. In the first case, the symbols would be deemed graphically separate because they were definitively recognized, but in the second case, they would be considered graphically non-separate, because the computer would be incapable of definitively recognizing either symbol.¹ Thus under the Court

¹ This court understands that under the '656 Patent, the sampling rate of drawn symbols is to be "sufficient" to avoid ambiguous recognition, and therefore, definitive recognition should always occur. However, it is beyond doubt that symbols that are graphically distinct could share many x-y, coordinates, and that if only the similar x-y coordinates are sampled, the symbol will not be definitively recognized. The 656 Patent teaches that to avoid a situation where the sampled coordinates of two symbols are identical, the symbols should be graphically well separated.

of Appeals' claim construction, the ultimate determination of whether or not the symbols are graphically separated rests not on the form or direction of the symbols themselves, but on how the symbols are processed by a recognition device.

3Com also complains that if graphical separation is defined solely in terms of definitive recognition, a competing set of spatially independent single-stroke symbols would have to use identical symbols to represent different alphanumeric characters to avoid reading on the claims of the '656 Patent--a limitation that would render such a symbol set useless. This result stems from the fact that under the Appeals' Court definition, any symbol that is definitively recognized is considered graphically separated. Because a unistroke symbol that is graphically separated reads on the patent claims, a competing symbol set would be required to use symbols that could not be definitively recognized to avoid the graphical separation claim. If, however, a symbol can not be definitively recognized by the computer, the symbol will have no value to a user as a representation of an alphanumeric character because the user will be unable to enter that character (via the symbol) into the computer. Thus, under the Court of Appeals definition, there can be no usable set of spatially independent, single-stroke symbols that will not infringe on the '656 Patent.


Although 3Com argues that some Graffiti symbols are not graphically separate because "Graffiti includes numerous pairs of

single-stroke symbols that (1) are highly similar in appearance, i.e. have substantial geometric overlap, and (2) have the same stroke direction . . .” this argument is foreclosed by the Court of Appeals claim construction. As stated above, graphical separation, under the Appeals Courts’ definition is not determined by examining the symbols themselves, but instead is determined by whether or not the symbols are definitively recognized by the recognition device. Moreover, the Court of Appeals unambiguously held that all Graffiti symbols are definitively recognized immediately upon delimitation or pen lift. In reversing this court’s previous finding, the Court of Appeals stated: “the [district] court was incorrect that Graffiti does not allow for definitive recognition of all symbols immediately upon pen lift.” Xerox, 267 F.3d at 1368. (emphasis added). Because all Graffiti symbols are definitively recognized, they all meet the “graphical separation” requirement of the ‘656 Patent. 3Com’s arguments that such a broad definition of graphical separation runs counter to the limitations Xerox imposed on the ‘656 Patent during its prosecution, however laudable, are not cognizable by this court given my obligation under the Mandate rule to accept and apply the Court of Appeals determination.

2. Spatial Independence

As defined by the Court of Appeals, the spatial independence limitation of the ‘656 Patent claims requires that “the invention be capable of properly distinguishing and recognizing symbols without reference to where a previous symbol was written on the

writing surface.” Xerox, 267 F.3d at 1368. It determined that Graffiti symbols meet the spatial independence claims of the ‘656 Patent because recognition of a Graffiti symbol is independent of the placement of the previous symbol. Xerox, 267 F.3d at 1369.

3Com contends that despite the Court of Appeals’ holding, not all of the Graffiti symbols practice spatial independence. 3Com points out that the graffiti symbol represented by a diagonal line drawn from top to bottom right to left (similar to a backslash “/” on a typewriter) (hereinafter the “backslash symbol”), is recognized only in relation to a previous symbol. For example, if the backslash symbol is written following a symbol that looks like a forward slash (“\”), the computer will recognize an “X.” However, if the backslash symbol is made after any other symbol, the computer recognizes the backslash as a “return” command. Thus 3Com argues that the backslash symbol is not spatially independent, in that it is recognized differently depending on what is written before it. In its opposition papers, and at oral argument, 3Com again attempted to establish that Graffiti symbols lacked spatial independence by demonstrating that the Graffiti symbol  would be recognized as one of two different characters, either an “N” or a quotation mark, depending on the location of a previous symbol, if that symbol was the “forward slash” symbol.

3Com’s argument cannot withstand the interpretation of the patent claims as set forth by the Court of Appeals. The Court of

Appeals addressed 3Com's concerns when it rejected 3Com's arguments related to accented characters. The Court noted that Graffiti contained some multi-stroke, multi-symbol characters, the presence of which did not alter the spatially independent nature of the Graffiti symbols. As the concurring opinion noted, the "x" in Graffiti is simply a multi-stroke, (and presumably multi-symbol) character. Because the recognition device recognizes each symbol of a multi-stroke, multi-symbol character without reference to what was written before it, the spatial independence limitation of the '656 Patent is met by all Graffiti Symbols.

With respect to the "N" symbol, that symbol is definitively recognized regardless of the location of a previously written symbol. The only effect the previously written symbol has on the "N" symbol is in the interpretation of the "N" symbol, not the recognition of that symbol. To that extent, the '656 Patent itself provides for the different interpretation of Unistroke symbols depending on what symbol was written before it. For example, in the embodiment disclosed in the patent, the Unistroke symbol for a "1" written as follows: ↓ , is the same as the Unistroke symbol for the letter "i", also written as ↓ . In unistrokes, just as in Graffiti, the symbol is definitively recognized regardless of the existence or location of any previous symbol. While the symbol may be interpreted differently based on the existence, or in the case of Graffiti, the existence and location of a previous symbol),

the '656 Patent does not teach that symbols must be interpreted without reference to a previous symbol, but instead, teaches that symbols must be recognized without regard to a previous symbol. Because Graffiti symbols are definitively recognized without reference to where a previous symbol was written, I find that Graffiti practices the spatial independence claims of the '656 Patent.

III. Validity

Xerox seeks a declaration that its patent is valid and enforceable. 3Com contends that if the '656 Patent is construed in such a way that Graffiti is covered by that patent, then the patent is invalid against prior art. In the alternative, 3Com contends that the '656 Patent is invalid because Xerox (1) failed to disclose the best mode of the patent; (2) failed to comply with the enablement, written description, and definiteness requirements for obtaining a patent; (3) engaged in inequitable conduct during the original prosecution of the patent and during the reexamination; and (4) failed to name the proper inventors.

A. Validity in Light of the Court of Appeals Claim Construction

3Com argues that if the '656 Patent is construed in such a way that Graffiti reads on the patent's claims, then the patent is invalid on grounds that it would read directly on prior art. Because patent claims should be interpreted to sustain their validity, if possible, ACS Hospital Systems, Inc. v. Montefiore

Hospital, 732 F.2d 1572, 1577 (Fed Cir. 1984), 3Com contends that the claims of the '656 Patent must be construed to avoid reading on prior art references, and that if the patent is so construed, it will be found not to cover Graffiti.

The disputed claims in this case, however, have already been construed by the Federal Circuit Court of Appeals. That court presumably did not construe the claims in such a way as to be invalid. Although the Court did not explicitly state that it construed the '656 Patent claims in light of the Burr and Nagayama prior art references, those references were a part of the record on appeal, and accordingly, it may be inferred that the Court of Appeals considered those references. Accordingly, I decline to re-examine the prior art references, and find that the '656 Patent is not invalid as against the prior art.

B. Remaining Validity Arguments

1. Best Mode

3Com contends that the '656 Patent is invalid because Dr. Goldberg failed to describe the best mode of the patent. Specifically, 3Com argues that Dr. Goldberg failed to disclose a Modula-3 software program that performed the recognition function.

I find that the '656 Patent is not invalid for Dr. Goldberg's failure to disclose the best mode. The '656 Patent discloses that a software program is used to perform the recognition, and discloses how the program does so. Such disclosure satisfies the best mode requirement in this case. See Fonar Corp. v General

Electric Co., 107 F.3d 1543, 1549 (Fed. Cir. 1997) ("As a general rule, where software constitutes part of the best mode of carrying out an invention, description of the best mode is satisfied by a disclosure of the functions of the software").

2. Enablement, Written Description and Definiteness Requirements

In a variation of its argument that the '656 Patent is invalid if it is determined that Graffiti reads on the claims of the '656 Patent, defendants contend that the patent is invalid because it fails to disclose how the claimed invention could recognize graphically similar symbols (like those of Graffiti) using its "rudimentary" recognition algorithm. 3Com contends that the specification does not provide sufficient information to enable one skilled in the art to make and use the invention. Moreover, 3Com contends that the written description of the invention is deficient in that it does not disclose the use of a stylized Roman alphabet. Finally, 3Com argues that the claims of the '656 Patent lack definiteness because they do not explain how an alphabet such as the Graffiti alphabet could be covered by the claim limitations.

I find that the '656 Patent is not invalid for failure to comply with the enablement, written description, and definiteness requirements for United States Patents. The written description of a patent need describe only the claimed invention, not all potentially infringing embodiments of the patent. See Purdue Pharma L.P. v. Faulding Inc., 230 F.3d 1320, 1323 (Fed Cir.

2000) (written description “does not have to provide in haec verba support for the claimed subject matter at issue” (citing Fujikawa v. Wattanasin, 93 F.3d 1559, 1570 (Fed.Cir.1996)), but nevertheless must “allow one skilled in the art, reading the original disclosure, [to] immediately discern the limitation at issue in the claims.” (citing Waldemar Link GmbH & Co. v. Osteonics Corp., 32 F.3d 556, 558 (Fed.Cir.1994))).

With respect to 3Com’s argument that the specification does not disclose how the invention could distinguish and recognize the graphically similar symbols used in Graffiti, the ‘656 Patent merely discloses that it samples the x-y coordinates of a given symbol at a sufficient rate to enable adequate recognition. The specification provides sufficient information as to how it performs character recognition, and is sufficiently definite to enable one skilled in the art to make and use the invention.

3. Inequitable conduct

a. Prosecution History

3Com claims that Dr. Goldberg failed to disclose four relevant references to the PTO during the initial examination of the ‘656 Patent. Specifically, 3Com claims that Dr. Goldberg failed to reveal: (1) a prior art Moon Type alphabet that contained symbols that were similar in appearance to Unistroke symbols; (2) the Sklarew patent; (3) the prior art Tironian alphabet, which is composed of single stroke characters; and (4) the Tappert Survey article. 3Com contends that the relevancy of the Moon Type

alphabet and Sklarew patent is without question, given that the PTO initially rejected all of the claims of the '656 Patent upon being advised of the existence-during reexamination-of these references. This argument, however, actually demonstrates the irrelevance of these patents given that the PTO affirmed all of the claims of the '656, without modification, following reexamination. Such action indicates that the Moon Type prior art and the Sklarew patent had no bearing on the patentability of the invention disclosed in the '656 Patent. Moreover, I find that the Tironian alphabet and Tappert survey article are not material. Finally, there is no evidence of deceptive intent on the part of Dr. Goldberg to mislead the PTO by concealing any prior art references. Accordingly, I find that plaintiff did not engage in inequitable conduct during the original prosecution and examination of the '656 Patent.

b. Reexamination

3Com contends that Xerox engaged in inequitable conduct during reexamination of the '656 Patent by expressly representing to the PTO that Unistroke symbols were required to be graphically well-separated, and that this characteristic distinguished unistrokes from such prior art as Burr, (which used Roman alphabet characters), when it already asserted claims in this litigation that Graffiti symbols, (which are also based substantially on Roman characters), are graphically well separated). Additionally, 3Com contends that Xerox misled the patent examiner with respect to the meaning of definitive recognition. Specifically, 3Com contends

that during reexamination, Xerox led the examiner to believe that symbols in other systems that required a subsequent stroke to complete the symbol, such as accented vowels in Graffiti) were distinct from and not covered by the '656 Patent. The Patent Examiner noted that:

Examiner and applicant's representatives agreed that Goldberg [the '656 Patent] teaches and claims a system that always reaches a final recognition upon pen-up after each stroke (i.e. every symbol is finally recognized upon pen-up and none can be modified by subsequent strokes), as opposed to the claimed invention [Graffiti], Sklarew and other prior art of record where some strokes initially recognized as one character may be modified by subsequent (i.e. 'post-character') strokes (e.g. the letters disclosed in applicant[] [3Com's] patent application that can be modified to accented letters by subsequent strokes).

Interview Summary of Larry Prikockis at p. 3, attached as Exhibit 45 to Defendants' Motion for Summary Judgment.

Prior to the issuance of the Court of Appeals' October 5, 2001 Opinion, 3Com's argument could have been persuasive. However, the Court of Appeals has determined that Graffiti symbols are graphically separated. Accordingly, there is nothing inconsistent in arguing that unistrokes must be graphically separated and that Graffiti symbols infringe on the '656 Patent because those symbols are graphically separated. In light of the Court of Appeals' ruling, the fact that Xerox taught away from a Roman alphabet on grounds that the alphabet is not graphically well-separated, or that Xerox has claimed that Graffiti (in which 17 of the 26 symbols

used to represent letters of the roman alphabet are actually drawn in the shape of the Roman alphabet character) is graphically well separated, has no bearing on whether or not Xerox has taken inconsistent positions with respect to the definition and scope of graphical separation. Similarly, 3Com's argument with respect to definitive recognition is foreclosed by the Court of Appeals' Decision. The Court of Appeals held that the accented vowels used in Graffiti were "multi-stroke, multi-symbol" characters, and thus were not symbols that were altered by subsequent strokes.

Because 3Com's claims of inequitable conduct during reexamination are foreclosed by the Court of Appeals prior ruling, I deny 3Com's motion for a declaration that the '656 Patent is unenforceable due to inequitable conduct.

4. Failure to name all Inventors

3Com contends that the '656 Patent should be declared invalid on grounds that inventor David Goldberg failed to name all inventors in the patent application. Specifically, 3Com contends that Cate Richardson and Dr. Mark Stefik should have been named as inventors of the '656 Patent. According to 3Com, Richardson actually created the unistrokes alphabet, and Dr. Stefik conceived of the idea of heads up writing.

I find that Xerox is entitled to summary judgment on this issue. It is undisputed that Cate Richardson was a summer intern during the time she assisted Dr. Goldberg in developing the unistrokes alphabet. As such she was working under the direction

of Dr. Goldberg. See Deposition Testimony of Cate McMartin (nee Richardson) at p. 39. Because she was working at the direction of Dr. Goldberg, and was merely implementing his ideas, I find that Cate Richardson was properly not named as an inventor. Ethicon, Inc. v. U.S. Surgical Corp., 135 F.3d 1456, 1460 (Fed. Cir. 1998). Moreover, Dr. Stefik, acknowledged that the invention disclosed in the '656 Patent was distinguishable from the research he was working on, particularly because unistrokes involved a specialized alphabet. Deposition of Mark Stefik at pp. 33-34.

CONCLUSION

For the reasons set forth above, I find that defendant's Graffiti product infringes U.S. Patent 5,596,656. I additionally find that the '656 Patent is valid and enforceable. I therefore grant Xerox's motion for summary judgment, and deny defendants' motion for summary judgment.

ALL OF THE ABOVE IS SO ORDERED.

MICHAEL A. TELESKA
United States District Judge

Dated: Rochester, New York
December 20, 2001